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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,035	11/21/2003	Francis Yu-Hei Tsang	35811-00001	2542

7590

07/11/2005

Docketing Department  
Gibson, Dunn & Crutcher LLP  
Suite 4100  
1801 California St.  
Denver, CO 80202

EXAMINER
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GREENE, DANIEL LAWSON

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/720,035	Applicant(s) TSANG ET AL.	
	Examiner Daniel L. Greene Jr.	Art Unit 3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-78 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-78 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-29 drawn to an apparatus (nuclear voltaic cell), classified in class 376, subclass 320.
  - II. Claims 30-45 and 49-55 drawn to an apparatus (nuclear voltaic cell array), classified in class 376, subclass 320.
  - III. Claims 46-48 and 56-63, drawn to an apparatus (nuclear reactor core), classified in class 376, subclass 179.
  - IV. Claims 64-78, drawn to a method, classified in class 376, subclass 402.
2. The inventions are distinct, each from the other because of the following reasons:
  - a. Inventions (III) and (I, II) are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed as shown by, for example, claim 56, which is an evidence claim showing that the combination does not require all the details of the subcombination, as set forth, for patentability. The subcombination also has separate utility such as a flashlight battery.

b. Inventions II and I are related as combination and subcombination.

Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed, as shown by, for example, claim 49, which is an evidence claim showing that the combination does not require all the details of the subcombination, as set forth, for patentability. The subcombination also has separate utility such as a flashlight or hearing aid battery.

c. Inventions I-III and IV are related as apparatus and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process of using that product such as **indirectly** converting nuclear fission energy into electrical energy.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

3. Upon election of one of the inventions I-IV above, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, no claims appear generic.)

3a. The embodiment wherein the semiconductor is a p-type semiconductor as set forth in claim 3.

3b. The embodiment wherein the semiconductor is an n-type semiconductor as set forth in claim 4.

4. Upon election of one of the inventions I-IV above, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, no claims appear generic.)

4a. The embodiment wherein the nuclear material is deposited on a layer of substrate as set forth, for example, in claim 1.

4b. The embodiment wherein the nuclear material is in solution with the semiconductor material as set forth, for example, in claim 16.

5. Upon election of one of the inventions I-IV above, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, no claims appear generic.)

5a. The embodiment wherein the metallic contact layer forms a low resistance contact as set forth in claim 1 and page 12 of the specification.

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- 5b. The embodiment wherein the metallic contact layer forms an Ohmic contact as set forth in claim 1 and page 12 of the specification.
6. Upon election of one of the inventions I-IV above, the applicant is further required, under 35 U.S.C. 121, to elect a single species of the semiconductor material (e.g. selenium only, the combination of selenium and tellurium only, etc.) for the purpose of examination. This additional requirement is to facilitate examining due to the broad range of materials or compositions that are included in phrase "semiconductor material", see for example page 14 ,lines 1-11 and page 15, lines 12-14 of the specification.

**NOTE: In regard to the single species election of species, the election should not be open-ended (i.e. comprising).** An open-ended election will be considered non-responsive; therefore the election must be closed ended (i.e. consisting of).

7. Upon election of one of the inventions I-IV above, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, no claims appear generic.)

7a. The embodiment wherein the nuclear material is fissile as set forth, for example, on page 1 of the specification.

7b. The embodiment wherein the nuclear material is non-fissile as set forth, for example, on page 1 of the specification.

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8. Upon election of **ONLY species 7a** above, the applicant is further required to elect, under 35 U.S.C. 121, a single species of fissile material (e.g. Uranium ONLY, thorium ONLY, the combination of Uranium and Plutonium ONLY, etc.) for the purpose of examination. This additional requirement is to facilitate examining due to the broad range of materials or compositions that can be included in applicants nuclear voltaic cell, e.g. see for example page 1 of the specification.

**NOTE: In regard to single species election of species, the election should not be open-ended (i.e. comprising).** An open-ended election will be considered non-responsive; therefore the election must be closed ended (i.e. consisting of, is only, etc.). For example, the embodiment wherein the fissile material consists of uranium only, or the embodiment wherein the fissile material consists of the combination of plutonium and uranium only, etc.

9. Upon election of **ONLY species 7b** above, the applicant is further required, under 35 U.S.C. 121, to elect a single species of the type of radioactive isotope (e.g. alpha particle emitter only, beta particle emitter only, the combination of gamma particle and beta particle emitter only, etc.) for the purpose of examination. This additional requirement is to facilitate examining due to the broad range of materials or compositions that can be included in applicant's nuclear voltaic cell, see for example claim 13 and page 16 of the specification.

10. Applicant is advised that a reply to this requirement **must include an identification of the species that is elected consonant with this requirement, and a listing of ALL claims readable upon the election thereof**, including any claims

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subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

11. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

12. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

13. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).




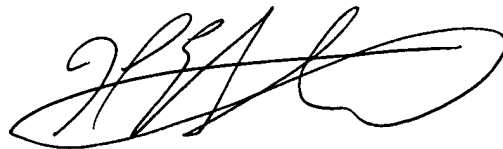
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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel L. Greene Jr. whose telephone number is (571) 272-6876. The examiner can normally be reached on Mon-Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DIG   
July 6, 2005



**HARVEY BEHREND  
PRIMARY EXAMINER**